

WAIS Inc

Wide Area Information Servers

FOR IMMEDIATE RELEASE

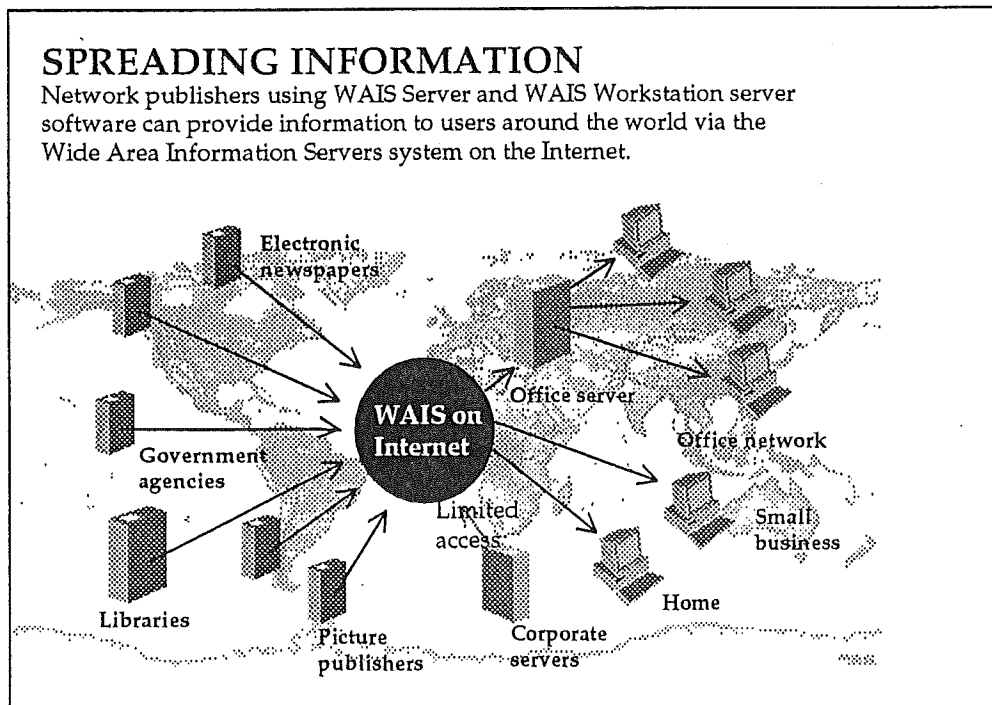
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WAIS INC. RELEASES NEW NETWORK PUBLISHING SOFTWARE

April 29, 1993, MENLO PARK, California – At a press briefing held today, Wide Area Information Servers Inc. (WAIS Inc.), a new company, announced its line of network publishing server software.

The products, WAIS Server™ for Unix and WAIS Workstation™ for Unix, are designed for commercial-quality network publishing applications. The software sells for \$10,000 to \$50,000.

"WAIS Inc. is helping publishers and companies reach the millions of people who are using today's wide-area networks," said Brewster Kahle, president of WAIS Inc. "We are combining a powerful search engine and a professional support organization with the WAIS system. The resulting system is creating a new breed of network publishers that can distribute information more broadly, quickly and inexpensively than previous technologies."



The WAIS™ system is an open network publishing system, based on international standards, that lets users easily find information anywhere on the network. The system, which has been tested globally on the Internet for two years, is used by people in more than 28 countries to search some 400 information sources around the world.

Mitchell Kapor of the Electronic Frontier Foundation and founder of Lotus Development Corp. said: "Millions of people already use the Internet. WAIS is an important tool helping people navigate through the vast oceans of information of the net, and WAIS Inc. is an important pioneer in building the tools which open new information markets."

WAIS Inc. customers include Perot Systems, the Library of Congress, Environment Protection Agency, Rice University and TRADE. WAIS Inc. is not at liberty to disclose the names of all customers.

WAIS Server is a powerful information server that is designed for client-server operation on wide-area networks and enterprise-wide LANs. Its features help users understand what a database contains and how it should be used. It also supports restricted access and logging for billing purposes. These logging features also provide maintainers with feedback on usage patterns.

The search engine at the core of the WAIS Server allows easy access to documents in their original formats – such as word processors, databases or newsfeeds. It answers natural language questions and uses relevance feedback (or "find me more like that one") features to help untrained users navigate through gigabytes. For more trained users, the WAIS Server answers Boolean queries and fielded searches, while still ranking the best answers highest.

WAIS Workstation offers all of the same features, but its use is limited to databases of 100 megabytes or smaller. This configuration is designed for enterprise information sharing and smaller network publishers.

For more information on WAIS Inc. products, call Nathaniel Lee at (415) 617-0444 or e-mail to info@wais.com.

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WAIS™ is a trademark of Wide Area Information Servers Inc.

Internet and some innovative software are changing the nature of the library. Instead of being at the end of the block, a book collection will exist in cyberspace.

Good-bye, Dewey decimals

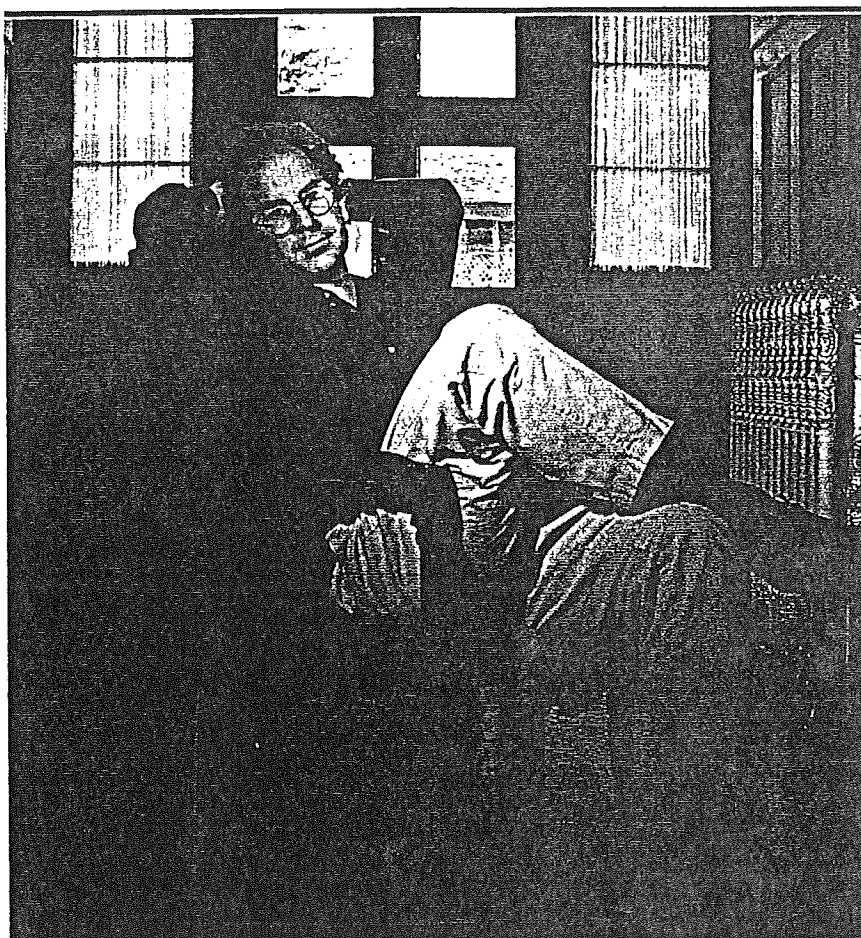
By David C. Churbuck

IT WOULD BE too much to argue that the jobs of the 152,000 librarians in the U.S. are in jeopardy. But it's fair to say that their jobs will change dramatically over the next two decades, courtesy of the Internet computer networking system and new software that controls Wide Area Information Servers, or WAIS.

Internet, a global network of computers formed by the government to connect universities, research labs and military complexes, was until recently largely limited to nonprofit users. But it is now taking on commercial customers (FORBES, July 8, 1991), who are finding the system an extremely economical way to gather and trade information. For as little as \$1 an hour, a subscriber to Internet can sit at a personal computer in his office, issue a request for information, and have the network route his request to libraries across the globe. The system will retrieve in a matter of seconds a collection of card-catalog citations that would have taken a lot of shoe leather to find in person. How else would a scholar in Chicago find out that "chaos" was touched on in a book written in 1741 in Latin and found in Harvard's library? Or what's in the Australian Defence Force Academy library. If he wants the volume, the researcher can follow up with a request for an interlibrary loan.

Full-text retrieval, still very limited at this point, is around the corner. When it comes, the local library as we know it all but disappears. In lieu of librarians we will have programmers and database experts.

One of the fathers of the Wide Area Information Servers concept is Brew-



WAIS Inc. founder
Brewster Kahle
**Building the
electronic library
of the future.**

ster Kahle, who developed programs for searching databases when he worked at Thinking Machines Corp., the Cambridge, Mass. manufacturer of supercomputers. Thinking Machines is primarily interested in developing a market for its hardware, whose parallel processors are ideally suited to massive text searches. Kahle's interest is in the software.

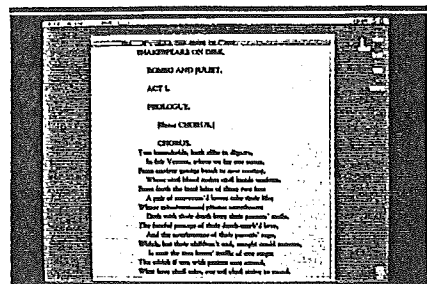
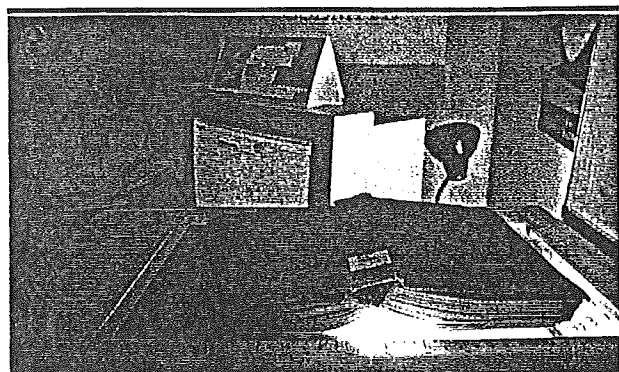
"People want to be able to pose a

question to the net[work] and not care where the answer comes from," says Kahle, 33, who recently left Thinking Machines to form WAIS Inc., in Menlo Park, Calif. Kahle's firm helps corporations and publishers set up electronic versions of copyrighted and public domain material and then make it accessible to users who are willing to pay for each download.

Kahle's software first paws through



Project Gutenberg founder Michael Hart; book scanning
Filling the shelves.



the raw text, indexing it to speed up later searches. Users can then submit plain-English queries. Ask for songs with the words "eyeball" and "toe jam," and it will come up with the Beatles' "Come Together." The system learns from trial and error, since the user can tell the computer which of the retrieved documents was closest to what he was looking for.

"WAIS is like a research librarian

who watches you read through a stack of information, taking notes on what you looked at first and set aside for future reference, and what information you threw away," explains Kahle. You can use WAIS to search a database on your own computer, but the software is optimized to handle the complexities of searches through physical-distant databases.

Programmers at the University of Minnesota have taken WAIS a step further. To get information from a WAIS, you have to know exactly where that information is—which server has, say, a collection of song lyrics. The new software, called Gopher, makes it easier to navigate through the network. Richard Wiggins, Gopher coordinator at Michigan State University in East Lansing, Mich., explains the difference between WAIS and Gopher:

"WAIS is for direct searches. Gopher is a browsing tool." Enhancements to Gopher aim at Kahle's ideal—a query about the Beatles is answered with simultaneous searches through all the card catalogs on the network.

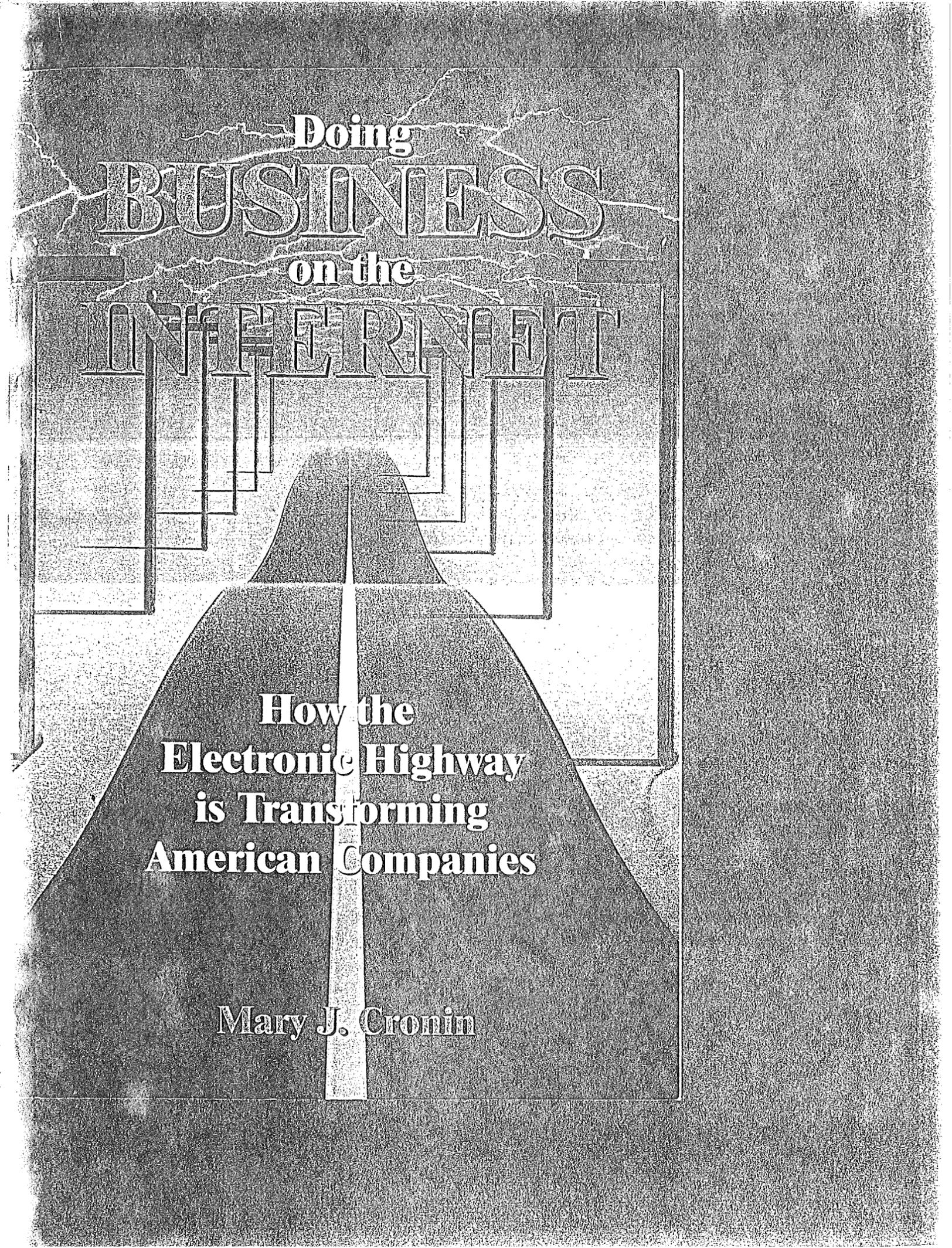
More libraries are joining the two-year-old Gopher system all the time, but the best is yet to come, including the 22-million-volume Library of Congress.

As with any new technology, some librarians are finding it hard to adapt. Says Wiggins: "In general terms, this technology is of interest to libraries, but it is frightening at the same time, setting off a struggle between academics who want knowledge spread around and librarians who want to control it."

Wide area information fanatics dream of an interlibrary loan system on a grand scale, in which only one copy of each book or magazine is in the system at all. That one copy could be used by many people at the same time and it would never be lost or overdue. Also, to the consternation of publishers thinking about royalties, it could be easily duplicated.

For this system of the future to become real, existing libraries of printed books will have to be digitized. That's the objective of Project Gutenberg, the creation of Michael Hart, professor of electronic text at Illinois Benedictine College in Lisle, Ill. If Kahle is building the shelves for the electronic library of the future, Hart is filling them. Gutenberg transcribes books, mostly in the public domain, for free digital distribution, whether via floppies or Internet.

For most of the 22 years that Hart has been at work on Gutenberg, digitizing has meant the slow and arduous retyping of the classics. Now, however, all Hart has to do is shred the binding off a book and feed the sheets into a scanner. Gutenberg has 50 titles on-line so far and expects to have 10,000 ready by the year 2001. That's nothing next to what the Library of Congress could crank out if it got serious about digitizing its collection, a project just getting under way. And if the programmers can solve some knotty problems involving pay-per-view and copying, there's no reason that newly published books cannot go on the system, too. ■



Doing
BUSINESS
on the
INTERNET

**How the
Electronic Highway
is Transforming
American Companies**

Mary J. Cronin

participation in the information age. Will these early entrepreneurs be the ones who strike it rich on the Internet? Certainly not all of them. Transitional periods pose great risks as well as great opportunities. The faster the rate of change, the more danger of misjudging the trend and spinning off into a dead end while technology rushes off in a new direction. But the innovations that succeed will help shape the twenty-first century. The small sample of Internet entrepreneurs profiled here are convinced that their vision of a new era will prevail.

It is not just the money that attracts entrepreneurial spirits to the Internet, although the phenomenon of exponential growth certainly factors somewhere in their planning. The network has the lure of the last frontier, the pull of infinite possibility. Becoming an Internet entrepreneur requires risk-taking, frequent course adjustments, and a vision strong enough to stand up to the skeptics. A sense of humor is highly recommended. Internet's pace of change is exhilarating, but it can be a maddening place to make a living.

BREWSTER KAHLE AND WAIS, INC.

Brewster Kahle, founder and President of WAIS, Inc. doesn't mind the madness when the stakes are important enough. In fact, after years of relative stability working at Thinking Machines, the supercomputer company in Cambridge, Massachusetts, he welcomes the bumps and turns of a start-up venture: "We are lucky to be early enough to look adventurous—I love being back at the stage when people are calling us crazy." His vision places WAIS at the center of a whole new network-publishing industry, serving as "the printing press company for an electronic age."

Kahle's decision to establish WAIS, Inc. to market a commercial version of the Wide Area Information Server grew out of a Dow Jones DowQuest information project in the late 1980s.

DowQuest used a powerful Thinking Machines parallel-processing supercomputer to provide a comprehensive search and retrieval system for business information. Brewster Kahle recognized in this system the potential for a distributed server application that would allow users to access any electronically stored information with one search strategy.

KPMG Peat Marwick, interested in a new approach to information management and document retrieval for its two hundred offices around the world, joined a development effort with Thinking Machines, Dow Jones, and Apple to test the concept of a Wide Area Information Server (WAIS). Brewster Kahle organized a working team to design a pilot system that would allow a Macintosh client application to access information from both the supercomputer and Unix servers. The goal was to create an easy to use, single point of entry to any electronic information source the user wanted to access. Since the target group for the pilot project included managers and accountants not familiar with search software or computer terminology, the interface had to be as straightforward as possible.

The WAIS software was designed so that a user could select databases around the world, then enter a question in natural language, like "find information about the common market and interest rates in Germany." WAIS would transmit the query across networks to selected sources and return with headlines from documents matching the relevant terms, displayed on the searcher's work station. The results of a search would be displayed in order of relevancy, offering the opportunity to scan and request more documents based on the closest matches. Information was accessible regardless of format: graphics, video, audio, and spreadsheets were as retrievable as text documents.

The working prototype demonstrated the feasibility of networked information retrieval, even though its bandwidth requirements ultimately proved too costly for the internal Peat Marwick network. Convinced that WAIS was ideally suited to the Internet environment, Thinking Machines released the first

incarnation of WAIS—both Unix server code and Macintosh client software—into the public domain in spring 1991. Almost overnight, quake.think.com became one of the hottest telnet addresses on the Internet, as other network sites set about downloading and adapting the prototype to their own local settings. Just six months after the first public release, there were more than a hundred WAIS servers on the Internet.

WAIS has entered the repertoire of virtually every Internet user who has browsed the network for files, documents, or other resources. After eighteen months in the public domain, the number of WAIS server locations had grown to include university campuses, government agencies, information publishers, and organizations large and small. Use of WAIS was doubling every six months, as information-hungry clients and information-rich servers teamed up around the world.

Even with a public domain WAIS freely distributed throughout the world, Brewster Kahle saw a business opportunity in developing a WAIS product for commercial distribution. Why would people pay for a commercial version of software that was already available for free? Corporate and government customers, he reasoned, would be willing to invest in the superior quality and dependable support a company dedicated to developing WAIS could offer. Many of the users familiar with WAIS wanted a more capable version, but didn't have the resources to upgrade and maintain the software themselves. The widespread use of WAIS in the public sector could actually be an asset in marketing a commercial version, since the prototype had proved viable on a global scale.

In summer 1992, Brewster Kahle established WAIS, Inc. as an independent corporation. His founding statement concludes:

Now WAIS, Inc. is positioned to take the lessons learned from the long history of WAIS and to apply them to the needs of business, education, and government organiza-

tions. Today, most documents are created on computers and networks increasingly tie computing devices together. Wherever there is someone with something to say, there is an appropriate place for WAIS.

One of the first projects for WAIS, Inc. was to provide an information system for the Ross Perot Presidential Campaign organization. Perot supporters used the system to keep campaign offices in all fifty states up to date on internal materials and current publications. They entered news clippings and all press releases into a WAIS-searchable database to ensure that field and headquarters shared the same information. As it turned out, the campaign results didn't hinge on information access, and Perot's withdrawal from the race put an end to this application. However, Perot Systems was sufficiently impressed with WAIS to become a customer in its own right. Other early customers included the Environmental Protection Agency, the Library of Congress, the Department of Energy, Rice University and T.R.A.D.E. Inc.

In general, Kahle expects the market for the new WAIS and other Internet tools to include:

- The U.S. government, the largest publisher in the country and now faced with a mandate to share federal information electronically. WAIS offers a cost-effective, easy to implement solution for many federal agencies. The Environmental Protection Agency has already contracted with WAIS to set up e-mail browsing and a digital library.
- Libraries, which have always collected and distributed information, and have a track record of implementing new technology. With WAIS, libraries can make in-house publications, full text, images, and other media immediately available to their campus and the community.
- Distributed corporations. As companies grow more global

and less hierarchical, they need efficient ways to share information laterally. WAIS combines of internal and external information access to provide maximum flexibility. Sun Microsystems, for example, uses WAIS to disseminate information to users. Their servers are handling more than seven thousand searches each day.

- Traditional publishers, which have the content expertise and the customer base, and must find a way to adjust to the changes in information access. Publishers are looking at wide area networks as a new distribution medium, and WAIS can provide an entry point.
- Information owners who see the opportunities for republishing their data to new audiences on-line; for example, T.R.A.D.E., INC. has all of the import manifests for all shipments arriving in the U.S. before they get into port; using WAIS to package this information in different ways for different markets, they have created a whole new generation of information products.

Kahle is counting on the biggest long-term growth from the commercial sector, and WAIS expects to work successfully with the business market. Businesses are accustomed to paying for products and software support, so he feels the transition from a free product to a for-sale item should not be a barrier to attracting corporate customers.

Customers who purchase WAIS servers may find that is just the beginning of the relationship with WAIS, Inc. Recognizing that many organizations and potential users may not have the technical staff to implement WAIS, Kahle's company offers a range of consulting services to help users get the system up and running. Consultants can also work with customers to capitalize on the new-found information retrieval capabilities WAIS provides within their organization. Kahle believes that it will become so cheap and easy to make large collections of information avail-

able either internally or externally, that many organizations will want help in establishing priorities that fit their overall strategies.

WAIS often teams up with a Gopher that allows users to browse through different segments of the Internet to locate resources, then zero in on a particular document or topic. People use Gopher to get to WAIS-enabled databases because a hierarchical information structure works only for small amounts of information. In this configuration, Gopher works as the table of contents, while WAIS provides the detailed index, capable of searching through many documents to retrieve those that provide the best match. Kahle sees this combination, together with e-mail, as the "magic triple" that makes Internet resources available to all types of users.

WAIS can function for the whole Internet as well as for internal organizational databases. As the browsing structures change and improve, WAIS, Inc. will keep updating its product to make it fully compatible with the most advanced tools available. Kahle, who serves on the Internet Engineering Task Force, is concerned with the viability of the Internet from the point of view of network planning as well as of a vendor. He wants to ensure that the resources of the Internet become more accessible to individuals and small businesses. "There is still a tremendous pent-up demand for higher level resources and better information-finding tools on the Internet," he says. "People are looking for mechanisms to upgrade both the information content and the tools used to access it. Unless both needs are met in a way that makes sense to the nontechnical business user, the Internet will become just another novelty and information will flow through other channels."

Kahle's vision of the future includes more and more people turning to their computers to answer questions; where they currently use paper and the phone he believes that soon workers will use their networked machines to find answers. This transformation of information-seeking behavior will make a dramatic difference in the nature of work and leisure. Kahle feels

the success of WAIS, Inc. should be measured by the quality and availability of WAIS servers around the world, as well as by the number of customers his company attracts:

WAIS, Inc. numbers so far have been doubling every seven months. If we can keep up with rate of Internet growth we will be successful—and thousands of customers will be able to access and to publish valuable information over the network. This change is definitely coming, and WAIS is one of the reasons. In 1990 when I said I was going to start a new industry of network publishers, very few people could understand how that would be a viable model for the future. Now everyone sees that by end of the decade, networked publishing will be the standard way of doing business.

One of the early converts was Perot Systems, which purchased a WAIS system to facilitate access to its own information and databases. WAIS provided the flexibility to allow the searching of files from any company location in combination with restricting access to confidential information. Perot Systems is the kind of corporate customer Brewster Kahle was hoping for when he founded WAIS, Inc. Defining itself as a "global information technology and business transformation firm," Perot Systems was founded in 1988 and now has operations in France, England, Germany, and Ireland as well as the United States. Its seventeen hundred employees are distributed around the world and are highly dependent on the latest information to be successful in their assignments. However, the company does not have a large internal systems support staff to design and update an extensive in-house information management system.

With staff expertise in different countries and a number of consulting projects underway at any given time, the challenge of matching existing resources with new projects is considerable. Perot Systems recognized that it needed a better method to share sources and project profiles, reports, resumes, and other infor-

mation of interest to people throughout the company. After seeing WAIS in action during the presidential campaign, managers decided to implement a pilot WAIS server to test its potential.

The WAIS server rapidly became a focal point for internal company resources. It was easy to scan in documents, project reports, consultant profiles, even databases. The search interface provided an intuitive way for employees everywhere in the company to search and receive information on demand. The systems staff found that it was even possible to download some of the CD-ROM databases into the WAIS server so that everyone could get access to marketing, product, and other types of information. With WAIS, it is also possible to keep track of who is searching what; the system can monitor simultaneous use of certain data where licensing is based on a formula according to number of users.

According to the information support staff at Perot Systems, WAIS offers a significant benefit to the company, facilitating publication of internal research results and reports. A company like Perot has to provide easily accessible information about previous consulting studies, or consultant teams start new projects from scratch, instead of building on what has already been accomplished. The WAIS server also helps project managers at remote locations keep up with new information and new expertise coming into the company. This is crucial when managers need to bring in additional project team members or are working with tight deadlines. Previously, a manager trying to locate someone with a particular skill for a new project team would be unable to search the file of consultants and credentials outside of normal business hours at headquarters. If he worked in a different time zone from the Texas office, that could lead to the lost project time.

WAIS has provided a new level of access to the resume bank that Perot Systems keeps for all the consultants on its staff. This information has strategic value for the company in

competing for customers and completing projects as efficiently as possible. When each project requires a different combination of expertise, it is critical to identify the people within the company who have the best combination of skills and experience, no matter where they are working at the moment. There are other commercial tools to keep track of employee skills and areas of expertise, but they are expensive and complicated to use. Even though Perot maintained an inventory skills system, it was not providing enough information throughout the company. WAIS made it possible to create an on-line resume system, offered a front end that was simple enough for everyone to use, and added the advantage of displaying the resumes retrieved in order of how closely they match the particular search terms.

One of the most attractive features of WAIS for Perot Systems staff has been the intuitive interface that allows people to feel comfortable with searching it almost at once. Instead of requiring a lot of additional training and implementation time, WAIS has allowed the systems staff to be more efficient in making resources available. The single interface allows users to search as many diverse resources as they wish, without having to learn new commands for each database. That stimulates the company to put even more resources on-line for internal access. The WAIS server has also led to more exploration of Internet resources, because the same interface can be used to pull in resources from the global network. Often searchers can locate items that they didn't know existed and combine the external information with the resources on the Perot system.

For Perot Systems, WAIS proved to be an easily implemented, simple to use tool that transcends the boundaries between internal and external information. Once in place, its value multiplied as more and more relevant information was opened up to employees. If Brewster Kahle's vision of the future prevails, many other companies will soon have the same experience.